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A late number of the Proceeds. Phila. Acad. contains an anatomical description of *Tarsius fuscus*, by Dr. Harrison Allen. The author describes the superficies, auricles, rugæ, bones and muscles and compares them with the account of the corresponding parts in the allied species *Tarsius tarsius* as given in Burmeister's monograph. Dr. Allen goes into some detail which is lacking in Burmeister's paper, notably full descriptions of the teeth, with figures; and notes on the mechanism of the limbs. (Proceeds., Phila., Acad., 1897.)

ENTOMOLOGY.[1]

Miss Ormerod's Report.—A perusal of Miss Ormerod's recent report on the injurious insects of Great Britain for 1896, shows that the insect pests on the other side of the Atlantic differ but little from their cousins here in their methods of attack. In fact, in many instances they are identical, portions of the report treating of the codlin moth (*Carpocapsa pomonella*), Asparagus beetle (*Crioceris asparagi*) and several other only too common American insects. There are numerous injurious insects, however, at present confined to the Old World, many of which in time are likely to gain foothold here, and against the introduction of which we cannot be too careful. Notice the devastation wrought by the common cabbage butterfly (*Pieris rapæ*) which in a few years after its introduction had spread from the Atlantic to the Pacific, and yet in England it is usually considered as of minor importance compared with its larger relative *Pieris brassicæ*. The gypsy moth is another example of the alarming spread of an insect in a new country when unchecked by its natural enemies. Hundreds of thousands of dollars have been spent by Massachusetts in an endeavor to eradicate it after it had gotten a strong foothold, all of which might have been saved had the attempt been made in time. And now according to the newspapers another undesirable emigrant has arrived on the scene in the form of the "brown tailed moth" and established itself in the very midst of the gypsy moth infested region in a strip a "mile long by half a mile wide" in which it has "stripped the most of the fruit and many of the shade trees." The insect from its life history would seem to be an easy enemy to fight and should it be as dangerous as reported will probably be stamped out with little trouble unless it has a greater range than was supposed. But if the few people who noticed it in previous years had but had a knowledge of entomology, who knows what might have been saved.

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[1] Edited by Clarence M. Weed, New Hampshire College, Durham, N. H.

The Twentieth Report shows the same painstaking care in its preparation that have characterized its predecessors. It has as a frontispiece a half-tone portrait of the author's sister, Miss Georgiana E. Ormerod, who so long collaborated in the entomological work, and who died during the year. American entomologists generally have felt much sympathy for Miss Ormerod in this loss and will read with interest the touching tribute in this report.

A large number of insects are treated of by the author of the report, and several new illustrations embellish its pages.

Lepidoptera.—Under the names Ptilodontidæ and Melalophidæ, Mr. Harrison G. Dyar[2] has made a generic revision of the North American, European and Indian members of that group of moths until recently known as Notodontidæ. He separates the two groups or families on larval characters. The lowest genera (*e. g.*, Gluphisia) present "smooth larva with simple setæ ; others have variously humped or otherwise modified bodies. Then follows a group in which the moths tend to lose the tongue although not sharply marked off by this character. The larvae, however, are hairy, that is they have developed warts and secondary hairs. The wart formation is peculiar being characterized by three warts above the stigmatical wart on the thorax, and thus contrasting with the parallel wart formation in the Arctiid allies, another great branch of the Bombyces. At first all the warts are in line but soon we reach forms (*e. g.*, *Apatelodes*) in which the central wart is moved back out of line. At this point a large group of moths in India, has diverged from the type losing one vein of the fore wings. These are the true Eupterotidæ and form the highest group of the Ptilodont allies. The line is, however, almost directly continued by the European genus Lemonia (frenulum gone) into the Lachneidæ (cubitus 4-branched), the larva remaining true to type but becoming gradually more specialized to culminate in the Lachneids." The Eupterotidæ are not treated of in the revision. As may be seen the first division is much the larger, but the second contains such well known forms as Datana, Melalopha (Ichthyura) and Apatelodes.

McNeill on Tryxalinæ.—The Davenport Academy of Natural Sciences, has just published in an octavo pamphlet of 96 pages and six admirable plates, Prof. J. McNeill's Revision of the Tryxalinæ of North

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[2] Transactions of American Entomological Society, XXIV, 1–20.

America. It is one of the most important pieces of recent work done on the North American Orthoptera by American entomologists; for the Tryxalinæ have been one of the least known though richest groups. The classification is an independent one and does not follow very closely Brunner's general outline of the Tryxalinæ of the world given four years ago, and which contains a relatively small proportion of the genera recognized by McNeill. Altogether 75 species are entered, referred to 31 genera of which 11 are proposed as new. Only ten new forms are described which is an astonishingly small number for the country since several new forms have been found in the East within recent years and a great deal remains to be done even here. A full figure, generally with considerable additional detail, is given for each genus, but unfortunately the enlargement above nature is not indicated. This memoir places our small grasshoppers on a very different basis from that on which they stood before and the figures alone are a striking addition to our means of study and determination.—*Psyche,* Vol. VIII, No. 352.

John L. Curtis.—Mr. John L. Kellogg in the Entomological News for April, 1897, in a sketch of the life of John L. Curtis says:—"The name of Mr. Curtis is not familiar to entomologists but I wish that some particulars of the brave life of this student of entomology, may be known to those whose attention may be arrested by the unknown name.

"John L. Curtis, of Oakland, Cal., died at twenty-five. During the twelve years preceding his death, his waking hours were passed in a wheeled chair. A paralytic affliction deprived him of the use of the muscles of body, legs and arms except those of his wrists and hands. His consolation and delight were found in the study of Natural history. After caring for and watching a solitary spider kept in confinement for several years, he began with earnest zeal the careful study of spiders. His friends sent them to him in such numbers that at times, he had sixty or seventy species under observation. Wheeled by a companion along hedge-rows he observed them in their natural homes and collected them. After three years of delighting, absorbing study his eyes so failed him, that he was limited during two years to one half hour a day to microscopic or minute examination. In the last two years of his life, his health failing constantly, he devoted himself exclusively to the observation of the new spider described elsewhere in the News. He devised ingenious methods of feeding, housing and watering his spiders. He made exhaustive observations of their every habit and recorded all in notes and drawing. Untrained, inert, helpless, tortured, his patient enthusiastic devotion to his studies, has enabled him to add something to our knowledge of living things and to find for himself happiness in the midst of affliction."

The description of the new spider is given in the same number and the substance of part of the author's notes in the species. Probably no species of insect has ever been described with such copious notes as to its life history and habits as in this case.

Hemiptera.—Mr. B. M. Duggar[3] has made a study of a bacterial disease of the Squash bug (*Anasa tristis*), and publishes a series of experiments on the inoculation of other insects with the culture.

The toxic properties of the bacillus were very marked. From one of the early isolation cultures several colonies of the disease bacteria were removed, " and diffused in a small quantity of distilled water to serve some inoculation purposes. On immersing young squash bugs in this solution death followed almost instantly.

With nymphs somewhat older the effect was not so rapid but the bugs soon succumbed. Young chinch bugs, flies and other insects stiffened as if dead on being immersed from one to several minutes. Many of the hard shelled insects if removed immediately on becoming rigid recover in a few minutes sufficiently to crawl away; but even these die if immersed in the solution for a longer time."

Messrs. Herbert Osborn and E. D. Ball[4] have published the results of a study of the life histories of the grass feeding Jassidæ. The more general results of their investigations show that so far as known all species deposit eggs upon the stem under the leaf sheaths of the plants used as food, and that the species have as a rule decided limitation as to food plant, but that the adults are more general feeders. Some of the species have but one brood, others two and still others three in a season and the ordinary life of a brood does not exceed two months. Some twenty-four species are noted as injurious to grass, several of which are undescribed. Technical descriptions of hitherto undescribed forms will appear in a forth-coming paper in the Proceedings of the Iowa Academy of Natural Sciences.

Mr. J. B. Smith[5] has made notes on the life history of the harlequin cabbage bug and melon plant louse (*Margantia histrionica* and *Aphis gossypii*) with preventive and remedial measures.

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[3] Bull. Ill. State Lab. of Nat. History, IV, 340–379.

[4] Bull. 34, Iowa Agri. Expt. Station.

[5] New Jersey, Agri. Exp. Sta., Bull., 121.

Alternation of Generations in Cynips calicis.—A recent paper by Prof. M. W. Beijerinck in *Archives néerlandaises d. sci. ex. e. nat.* (tome XXX, livr. 5) brings to light a very interesting case of alternation of generations in the genus Cynips as restricted by Mayr. *Cynips calicis* is a large agamic gall fly, produced from a rather large irregular gall on the acorns of *Quercus pedunculata.* This gall is rich in gallic acid and is of commercial importance in parts of southeastern Europe. In begins to develop in May, falls to the ground in autumn, and does not decay for several years. A portion of the flies come out at the end of the first winter and the remainder at the end of the second winter. The fly which emerges from this gall is incapable of producing it. The eggs of *Cynips calicis* are not deposited on *Quercus pedunculata* at all, but on another species of oak, *Quercus cerris.* *Cynips calicis* emerges in March and at this time the acorns of *Q. pedunculata* do not exist even in embryo, and are not in condition for eggs to be deposited in them until fully two months later. The eggs of *Cynips calicis* are deposited in the young anthers of *Quercus cerris* and from this oviposition results a conical tiny, hasty gall, very easily overlooked. Out of these galls in about two months emerge tiny, smooth gall flies, male and female, which belong to the genus Andricus. These flies immediately pair and the females at once deposit their eggs on the now ready young acorns of *Quercus pedunculata,* and around these develop the large galls of the *Cynips calicis.* The author was led to these discoveries by the fact that *Q. pedunculata* bears no galls of *Cynips calicis* in the Netherlands except when an occasional tree of *Q. cerris* happens to have been planted in the vicinity of the other species. His observations and experiments cover a period of several years, and there seems to be no doubt of his having proved his points. It is suggested that the galls of *Cynips calicis* might be made commercially important in the Netherlands by generally planting *Q. cerris* in the groves of *Q. pedunculata.* Of course, the thought lies very near that other species of Andricus simply represent the sexual stage of species of Cynips.—ERWIN F. SMITH.

General Notes.—Mr. F. H. Chittenden[6] has prepared a collection of articles on little known insects affecting stored vegetable products. Notes are given on a number of insects, some of which are previously unrecorded from America, and may prove decidedly injurious in the future.

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[6] U. S. Dept. of Agri., Div. of Entomology, Bull., No. 8—New Series.

Mr. Claude Fuller[7] of the Technological Museum, Sydney, has described and figured a very peculiar gall from a common Australian plant, which bears a striking resemblance to a caterpillar with its head and anterior parts of its body thrown back in an " attitude of defense." Neither " beetles nor inquilines seeking a suitable rearing ground for their young would be attracted by a caterpillar," thus protecting the inhabitants from injury from that source and though " insectivorous and predaceous birds might be attracted by it, they would at once be repelled by its woodiness while small wood pecking species, which might prey on its inhabitants would seldom be attracted by its appearance."

Dr. Otto Lugger[8] has prepared an extended report of the insects injurious in 1896, and of the parasites of man and the domestic animals.

EMBRYOLOGY.[1]

Breeding Habits of the Spotted Salamander.—The instincts and habits connected with the process of fertilization in the tailed amphibia are so remarkable, that even a few imperfect observations on these processes in our common salamander (*Amblystoma punctatum*) seem worth recording in the hope of aiding in some future comparative study that may throw light upon this puzzling chapter in Natural History.

Since Gasco[2] and Zeller[3] showed that the European triton and several other salamanders have an internal fertilization and yet no copulation, Jordan,[4] and also Gage,[5] have described much the same series of events in our common newt (*Diemyctylus viridescens*), while Ritter[6] has recently found similar phenomena in the western newt (*D. torosus*).

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[7] Agricultural Gazette of New South Wales, VII, 697.

[8] Minnesota, Agr. Exp. Sta., Bull. 48.

[1] Edited by E. A. Andrews, Baltimore, Md., to whom abstracts, reviews and preliminary notes may be sent.

[2] Gli amori del tritone alpestre, Geneva, 1880, and Les amours des Axolotyls. Zool. Anz., IV, 1881.

[3] Ueber die Befruchtung bei den Urodelen. Zeit. f. wiss. Zool., 1890, XLIX.

[4] Spermatophores of Diemyctylus. Journal of Morphology, V, 1891; and Habits and Development of the Newt. Idem., VIII, 1893.

[5] Life History of the Vermillion-spotted Newt. AMER. NAT., Dec., 1891.

[6] Diemyctylus torosu. Proc. Cal. Acad. Nat. Sci. Zool., Vol. 1, Jan. 18, 1897.